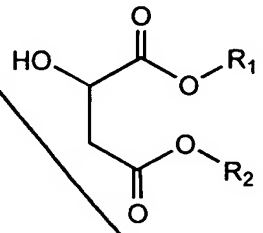
CLAIMS

We claim:

1. In a method for applying a coating of a water-based composition to a surface to partially or fully coat the surface, the composition containing an inorganic or organic compound and an effective amount of a surfactant for reducing the dynamic surface tension of the composition, the improvement which comprises employing as the surfactant a malate diester of the structure



where R_1 and R_2 are C3 to C6 alkyl groups.

2. The method of Claim 1 in which the water-based composition is selected from the group consisting of aqueous organic coating, ink, adhesive, fountain solution and agricultural compositions and the malate diester is present at 0.001 to 20 wt% of the water-based composition.

3. The method of Claim 2 in which an aqueous solution of the malate diester demonstrates a dynamic surface tension of less than 45 dynes/cm at a concentration of ≤5 wt% in water at 25°C and 6 bubbles/second according to the maximum-bubble-pressure method.

4. The method of Claim 1 in which R_1 and R_2 are the same.

5. The method of Claim 4 in which R_1 and R_2 are a C4 alkyl group.

6. The method of Claim 4 in which R_1 and R_2 are a C5 alkyl group.

7. The method of Claim 4 in which the alkyl group has terminal branching.

8. The method of Claim 4 in which the alkyl group is isobutyl.

9. The method of Claim 4 in which the alkyl group is n-butyl.

10. The method of Claim 7 in which the ester is derived from a primary alcohol.

11. The method of Claim 3 in which the measurement is made at 20 bubbles/second.

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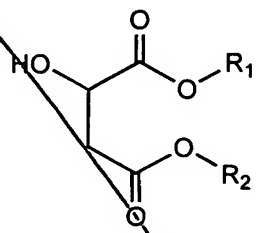
12. An aqueous composition comprising in water an inorganic compound which is a mineral ore or a pigment or an organic compound which is a pigment, a polymerizable monomer, an oligomeric resin, a polymeric resin, a detergent, a herbicide, an insecticide, a fungicide, or a plant growth modifying agent and an effective amount of a malate diester for reducing the dynamic surface tension of the composition, the malate diester having the structure:



where R_1 and R_2 are a C3 to C6 alkyl group.

13. The aqueous composition of Claim 12 in which an aqueous solution of the malate diester demonstrates a dynamic surface tension of less than 45 dynes/cm at a concentration of ≤5 wt% in water at 25°C and 6 bubbles/second according to the maximum-bubble-pressure method and the malate diester is present at 0.01 to 10 wt% of the aqueous composition.

14. The aqueous composition of Claim 12 in which R_1 and R_2 are a C4 alkyl group.

15. The aqueous composition of Claim 12 in which R_1 and R_2 are a C5 alkyl group.

16. The aqueous composition of Claim 12 in which the alkyl group has terminal branching.

17. The aqueous composition of Claim 16 in which the ester is derived from a primary alcohol.

18. The aqueous composition of Claim 12 in which the alkyl group is isobutyl.

19. The aqueous composition of Claim 12 in which the alkyl group is n-butyl.

20. The aqueous composition of Claim 13 in which the measurement is made at 20 bubbles/second.

21. The composition of Claim 12 which is an aqueous organic coating composition comprising in an aqueous medium 30 to 80 wt% of a coating composition which comprises the following components

0 to 50 wt% pigment dispersant, grind resin or mixtures thereof;

0 to 80 wt% coloring pigment, extender pigment, anti-corrosive pigment, other pigment types or mixtures thereof;

5 to 99.9 wt% water-borne, water-dispersible or water-soluble resin or mixtures thereof;

0 to 30 wt% slip additive, antimicrobial agent, processing aid, defoamer or mixtures thereof;

0 to 50 wt% coalescing or other solvent;

0.01 to 10 wt% surfactant, wetting agent, flow and leveling agents or mixtures thereof; and

0.01 to 20 wt% malate diester.

22. The composition of Claim 12 which is an aqueous ink composition comprising in an aqueous medium 20 to 60 wt% of an ink composition which comprises the following components

1 to 50 wt% pigment;

0 to 50 wt% pigment dispersant, grind resin or mixtures thereof;

0 to 50 wt% clay base in a resin solution vehicle;

5 to 99 wt% water-borne, water-dispersible or water-soluble resin or mixtures thereof;

0 to 30 wt% coalescing or other solvent;

0.01 to 10 wt% processing aid, defoamer, solubilizing agent or mixtures thereof;

0.01 to 10 wt% surfactant, wetting agent or mixtures thereof; and

0.01 to 20 wt% malate diester.

23. The composition of Claim 12 which is an aqueous agricultural composition comprising in an aqueous medium 0.01 to 80 wt% of an agricultural composition which comprises the following components

0.1 to 50 wt% a herbicide, insecticide, plant growth modifying agent or mixtures thereof;

0.01 to 10 wt% surfactant;

0 to 5 wt% dye;

0 to 20 wt% thickener, stabilizer, co-surfactant, gel inhibitor, defoaming agent or mixtures thereof;

0 to 25 wt% antifreeze; and

0.01 to 50 wt% malate diester.

24. The composition of Claim 12 which is an aqueous fountain solution composition comprising the following components

0.05 to 10 wt% film formable, water soluble macromolecule;

1 to 25 wt% alcohol, glycol, or polyol with 2-12 carbon atoms which is water soluble or can be made water soluble;

0.01 to 20 wt% water soluble organic acid, inorganic acid, or a salt thereof;

30 to 70 wt% water; and

0.01 to 5 wt% malate diester.

25. The composition of Claim 12 which is an aqueous adhesive composition comprising in an aqueous medium 30 to 65 wt% of an adhesive composition which comprises the following components

50 to 99 wt% polymeric resin;

0 to 50 wt% tackifier;

0 to 0.5 wt% defoamer; and

0.5 to 2 wt% malate diester.